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Alan H Thompson  
Patent Attorney  
Lawrence Livermore National Laboratory  
PO Box 808 - L-703  
Livermore, CA 94551

EXAMINER

NOGUEROLA, ALEXANDER STEPHAN

ART UNIT	PAPER NUMBER
1743	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/538,354

Applicant(s)

SWIERKOWSKI, STEFAN P.

Examiner

ALEX NOGUEROLA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2000 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

*Claim Objections*

1. Claim 1 is objected to because of the following informalities:
  - a) Claim 1, line 2: "cathode" should be -- cathode, --; and
  - b) Claim 1, line 4: "well" should be -- wells --.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

2. Claims 3 and 20-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- a) Claim 3 recites the limitation "sample wells with parallel sides" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

- b) Claim 3: if the sides of a well are parallel how can the well be circular?

- c) Claim 20, line 10: -- wells -- should be inserted after "waste";

- d) Claim 23: it is not understood how this claim further limits Claim 20. Claim 20 requires that the microchannels each have an injection point interconnecting a sample well, waste well, a cathode, and an anode. Doesn't this imply flow paths between the injection point and the wells and electrodes?

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-5, 9-15, 18, and 19 are rejected under 35 U.S.C. 102(e) as being clearly anticipated, with respect to Claims 1-5 and 9-15, and anticipated, with respect to Claims 18 and 19, by Simpson et al. (US 6,143,152) ("Simpson"). For the claimed features see the abstract; Figures 1-3D and 8; and column 7, lines 54-67. Note that article claims must rely upon the overall physical structure or limitations for patentability not on the intended use thereof - Ex parte Wikdahl, 10 USPQ2d 1546; In re Casey, 152 USPQ 235; In re Finsterwalder, 168 USPQ 530; In re Lampert, 114 USPQ 163; In re Otto, 136 USPQ 458; In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705. So, barring evidence to the contrary, a "sample" well is structurally

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the same as a “waste” well, only the intended use is different. In any event, Simpson clearly teaches twice as many sample wells as waste wells. See col. 7, ll. 54-57.

For Claim 3, note that a well comprises a hole by definition.

For Claims 18 and 19, note that from the specification page 8, lines 17-18 “bias” is taken to mean electrical bias. A common bias for the wells and samples is implied by Figure 8, which shows shared anode and cathodes (elements 614, 616, and 630).

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson et al. (US 6,143,152) (“Simpson”) in view of Zanzucchi et al. (US 5,846,396) (“Zanzucchi”).

Addressing Claims 6-8, Simpson teaches a microchannel cross load array comprising  
a cathode,

an array of sample wells,

an array of waste wells, the sample wells comprising twice the number of waste wells;

an anode, and

an array of functionally identical channels, each channel having an injection point with

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one well of the array of sample wells, the cathode and the anode.

For the claimed features see the abstract; Figures 1-3D and 8; and column 7, lines 54-67. Note that article claims must rely upon the overall physical structure or limitations for patentability not on the intended use thereof - Ex parte Wikdahl, 10 USPQ2d 1546; In re Casey, 152 USPQ 235; In re Finsterwalder, 168 USPQ 530; In re Lampert, 114 USPQ 163; In re Otto, 136 USPQ 458; In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705. So, barring evidence to the contrary, a “sample” well is structurally the same as a “waste” well, only the intended use is different. In any event, Simpson clearly teaches twice as many sample wells as waste wells. See col. 7, ll. 54-57.

In Simpson the sample wells and waste wells define circular holes. Simpson, however, does not teach square holes.

Wells defining square holes were known at the time of invention, as shown by Figure 1 of Zanzucchi. It would have been obvious to one with ordinary skill in the art at the time the invention was made to use wells defining square holes as taught by Zanzucchi in the invention of Simpson because this will allow the wells to be densely packed together while maximizing the cross-sectional area of the well (a square has a greater area than a circle whose diameter is equal in length to the length of a side of the square).

Addressing Claims 16 and 17, Simpson teaches a microchannel cross load array comprising

a cathode,

an array of sample wells,

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an array of waste wells, the sample wells comprising twice the number of waste wells;

an anode, and

an array of functionally identical channels, each channel having an injection point with one well of the array of sample wells, the cathode and the anode,

wherein the array of sample wells are located in a plurality of rows.

For the claimed features see the abstract; Figures 1-3D and 8; and column 7, lines 54-67.

Note that article claims must rely upon the overall physical structure or limitations for patentability not on the intended use thereof - Ex parte Wikdahl, 10 USPQ2d 1546; In re Casey, 152 USPQ 235; In re Finsterwalder, 168 USPQ 530; In re Lampert, 114 USPQ 163; In re Otto, 136 USPQ 458; In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705. So, barring evidence to the contrary, a "sample" well is structurally the same as a "waste" well, only the intended use is different. In any event, Simpson clearly teaches twice as many sample wells as waste wells. See col. 7, ll. 54-57.

Simpson does not mention the claimed relative and absolute pitches; however, as shown by Figures 1 and 8-12 of Simpson and Figures 1-3, 7, 9, and 12 of Zanzucchi and as implied by col. 3, ll. 14-29 of Simpson a great variety of configurations for wells and channels of a microfluidic system were known at the time of the invention. It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the pitches claimed by applicant to provide satisfactory or optimum spacing among the wells and channels that would, for example, provide dense packing of wells, yet limited heat effects of one well upon another or adequate spacing to allow detection focused on individual wells or channels.

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7. Claim 20, 21, 23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson et al. (US 6,143,152) ("Simpson").

Addressing Claim 20, Simpson teaches architecture for microchannel arrays using cross-loading for injection and separation chemistry applications performed in micro fluidic configurations,

the architecture producing a dense layout of functionally identical shaped microchannels, sample wells, and waste wells, and including a common cathode and a common anode,

the microchannels each having an injection point interconnecting a sample well, a waste well, a cathode and an anode,

the microchannels each defining equal length flow points between the injection point and the waste wells.

For the claimed features see the abstract; Figures 1-3D and 8; and column 7, lines 54-67. Note that article claims must rely upon the overall physical structure or limitations for patentability not on the intended use thereof - Ex parte Wikdahl, 10 USPQ2d 1546; In re Casey, 152 USPQ 235; In re Finsterwalder, 168 USPQ 530; In re Lampert, 114 USPQ 163; In re Otto, 136 USPQ 458; In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705. So, barring evidence to the contrary, a "sample" well is structurally the same as a "waste" well, only the intended use is different. In any event, Simpson clearly teaches twice as many sample wells as waste wells. See col. 7, ll. 54-57.

Simpson does not mention that the microchannels each define equal length flow paths between the injection point and the cathode; however, this feature is strongly implied by



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Figure 8, which show the channels between the cathode and the injection portions having turn portions that appear to in effect define equal length flow paths between the injection points and the cathode. In any event, it would have been obvious to one with ordinary skill in the art at the time the invention was made to have the microchannels each define equal length flow paths between the injection point and the cathode because the length of the flow paths will affect the flow through electroosmosis or electrophoresis, so having the flow path lengths the same will ensure that the different sample portions directed to the various injection points will flow under the same conditions and thus that differences in results are due to differences in samples, not in flow path lengths.

Addressing Claim 21, symmetric flow paths can be seen in Figure 8.

Addressing Claim 23, the claimed flow paths may be seen in Figure 8, for example.

Addressing Claim 26, sample and waste wells having circular walls are shown in Figure 8.

Addressing Claim 27, the anode and cathodes are each in a slot configuration in Figure 8.

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8. Claims 22, 24, 25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson et al. (US 6,143,152) ("Simpson") as applied to claims 20, 21, 23, 26, and 27 above, and further in view of Zanzucchi et al. (US 5,846,396) ("Zanzucchi").

In Figure 8 of Simpson the sample wells and waste wells are in alternating rows. Simpson also does not mention the claimed relative and absolute pitches. However, as shown by Figures 1 and 8-12 of Simpson and Figures 1-3, 7, 9, and 12 of Zanzucchi and as implied by col. 3, ll. 14-29 of Simpson a great variety of configurations for wells and channels of a microfluidic system was known at the time of the invention. It would have been obvious to one with ordinary skill in the art at the time the invention was made to arrange the wells as claimed or to use a pitch claimed by applicant to provide satisfactory or optimum spacing among the wells and channels that will, for example, provide dense packing of wells, yet limited heat effects of one well upon another or adequate spacing to allow detection focused on individual wells or channels.

For Claim 28, note that from the specification page 8, lines 17-18 "bias" is taken to mean electrical bias. A common bias for the wells and samples is implied by Figure 8, which shows shared anode and cathodes (elements 614, 616, and 630).


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (703) 305-5686. The examiner can normally be reached on M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JILL WARDEN can be reached on (703) 308-4037. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7719 for regular communications and (703) 305-5433 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Alex Noguerola  
February 22, 2002

  
Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700